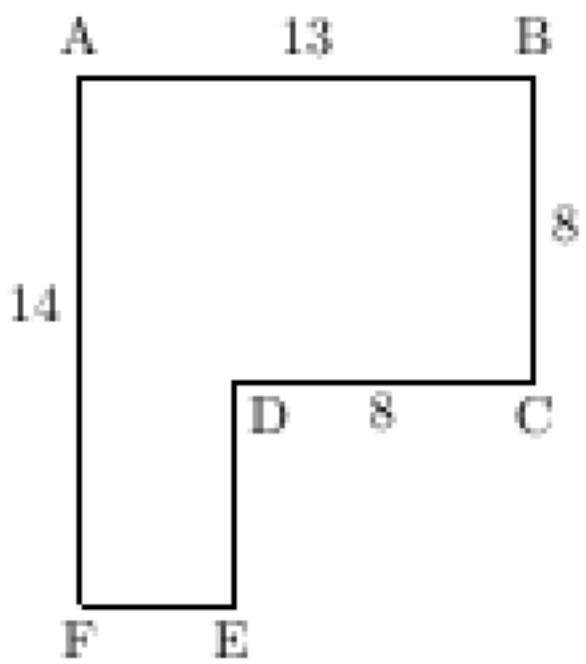
Topic: Area of a rectangle using sums and differences

Question: The figure is made by combining rectangles. What is the area of the figure?



Answer choices:

A 96

B 104

C 134

D 182

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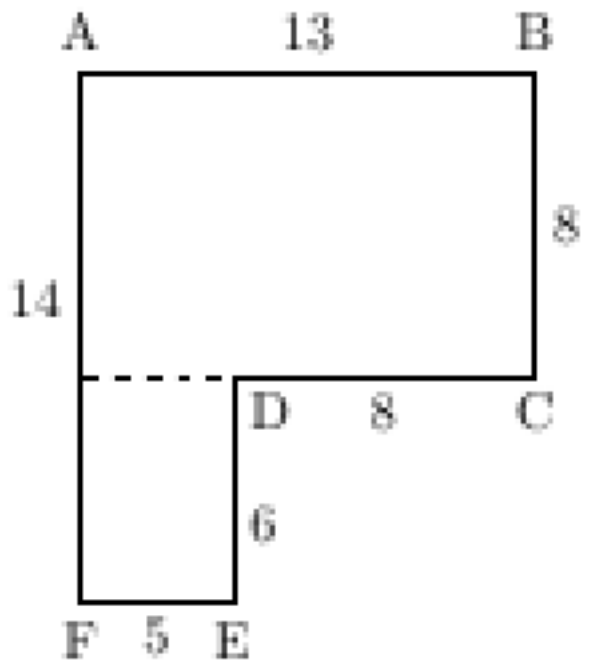
Solution: C

Draw a dashed segment separating the figure into two rectangles.



The height of the figure is 14, so DE must be 6.

The width of the figure is 13, so FE must be 5.

The area of the upper rectangle is

$$\text{area} = bh = 13 \cdot 8 = 104$$

The area of the lower rectangle is

$$\text{area} = bh = 5 \cdot 6 = 30$$

So the total is

$$\text{area} = 104 + 30 = 134$$

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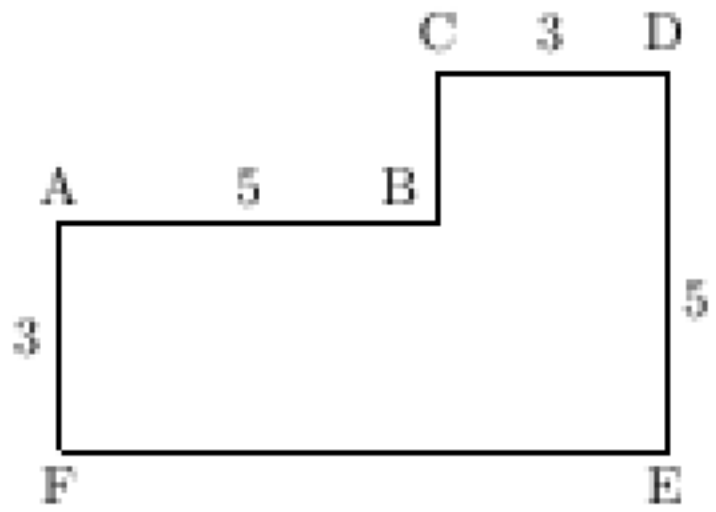

Answer choices:

A 30

B 40

C 42

D 52

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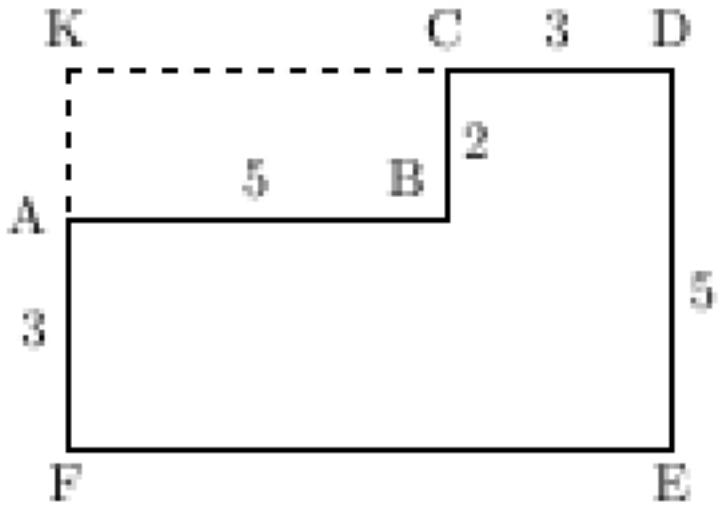
Solution: A

Draw dashed segments from K to C and to A, to form rectangle $ABCK$.



The height of the whole figure is 5, so BC must be 2.

By adding AB and CD we get a total width of 8.

The area of the overall rectangle $KDEF$ is

$$\text{area} = bh = 5 \cdot 8 = 40$$

The area of $ABCK$ is

$$\text{area} = bh = 5 \cdot 2 = 10$$

Now subtract the rectangle $ABCK$ from the rectangle $KDEF$.

$$\text{area} = 40 - 10 = 30$$

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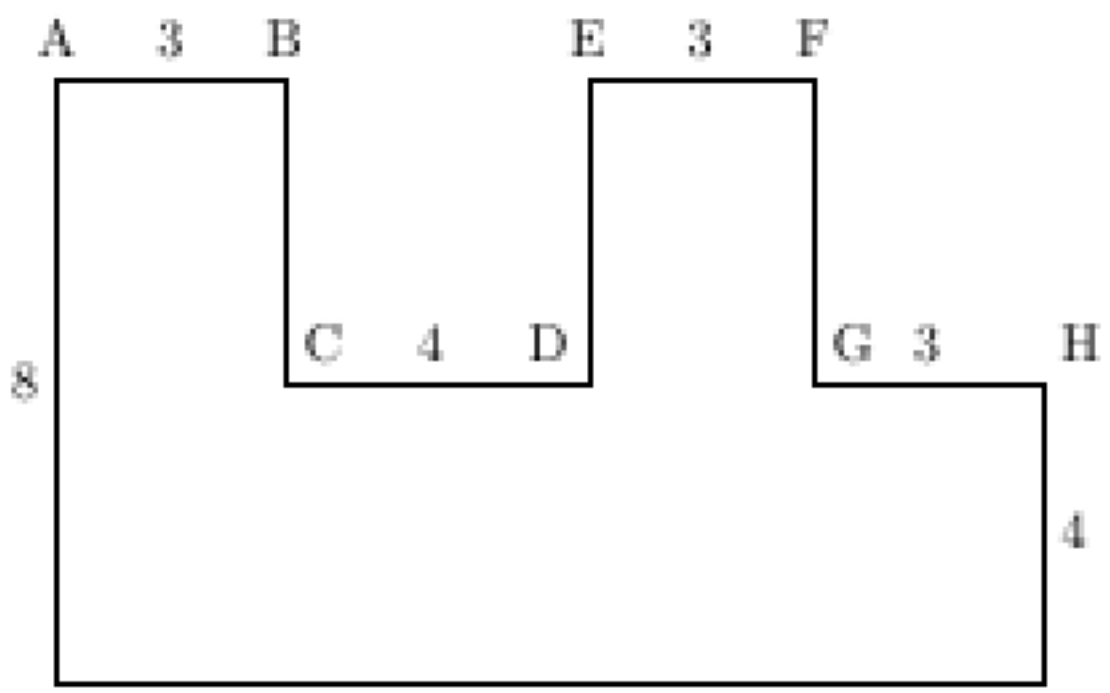

J I

Answer choices:

A 76

B 82

C 94

D 108

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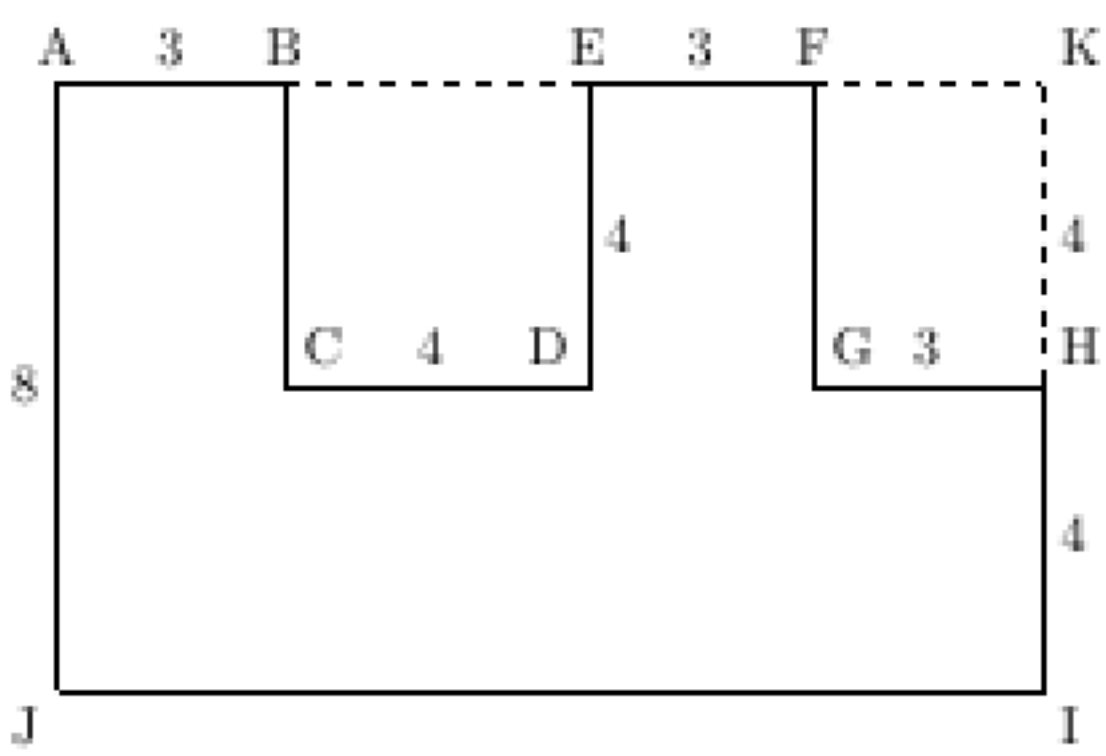
Solution: A

Draw a dashed segment from B to E forming rectangle $BEDC$. Then draw dashed segments from F and from H to a new point K to form rectangle $FKHG$.



The height of the figure is 8, so HK must be 4.

Likewise, DE must be also be 4.

By adding AB, CD, EF, and GH we get a total width of 13.

The area of the overall rectangle is

$$\text{area} = bh = 13 \cdot 8 = 104$$

The area of $BEDC$ is

$$\text{area} = bh = 4 \cdot 4 = 16$$

The area of $FKHG$ is

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$$\text{area} = bh = 3 \cdot 4 = 12$$

Now subtract the two rectangles $BEDC$ and $FKHG$ from the overall rectangle.

$$\text{area} = 104 - 16 - 12 = 76$$

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